What is claimed is:

1. An overcoating composition for photoresist comprising:

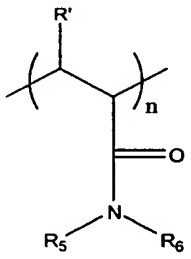
a water-soluble polymer,

an acidic compound: and

water.

2. The composition according to claim 1, wherein the water-soluble polymer is one of a compound of Formula 1 or polyvinylpyrrolidone:

Formula 1



wherein

R' is H or CH_3;

R_5 and R_6 individually are H or a C_1-C_3 alkyl group; and

n is number of repeating unit.

3. The composition according to claim 2, wherein n is an integer from 50 to 150.

4. The composition according to claim 2, wherein molecular weights of compound of the Formula 1 ranges from 5000 to 15000.

5. The composition according to claim 2, wherein the water soluble polymer represented by Formula 1 is poly (N, N-dimethylacrylamide).

6. The composition according to claim 1, wherein the acidic compound is an organic sulfonic acid.

7. The composition according to claim 1, wherein the acidic compound is a p-toluenesulfonic acid monohydrate.

8. The composition according to claim 1, wherein the acidic compound is present in an amount ranging from 2 to 20 wt% based on the water-soluble polymer.

9. The composition according to claim 1, wherein the water is present in an amount ranging from 500 to 4000 wt% based on the the water-soluble polymer.

10. A method for forming a photoresist pattern, comprising the steps of:

(a) forming a photoresist pattern by a lithography process;

(b) coating the overcoating composition of claim 1 on the whole surface of the photoresist pattern to form a overcoating layer;

(c) baking the overcoating layer; and

(d) developing the overcoating layer with an alkaline developing solution.

11. The method according to claim 10, wherein step (a) comprises:

(a-1) coating a chemically amplified photoresist composition on a semiconductor substrate and baking the substrate to form a photoresist film;

(a-2) exposing the photoresist film to light;

(a-3) baking the photoresist film; and

(a-4) developing the photoresist film.

12. The method according to claim 10, wherein a height of the photoresist pattern obtained from step (a) ranges from 2000 to 3000 Å.

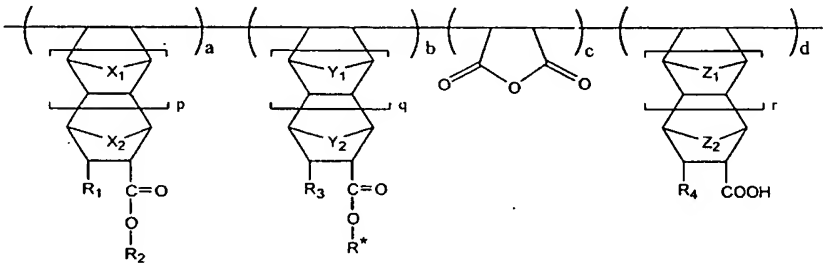
13. The method according to claim 10, wherein a thickness of the overcoating layer in step (b) ranges from 200 to 5000 Å from the top surface of the photoresist pattern of the step (a).

14. The method according to claim 10, wherein the bake process of step (c) is performed at a temperature ranging from 50 to 150°C for 30 to 90 seconds.

15. The method according to claim 10, wherein the alkaline developing solution of step (d) is TMAH, KOH or NaOH aqueous solution.

16. The method according to claim 11, wherein the chemically amplified photoresist composition comprises a photoresist polymer having a repeating unit of Formula 2:

Formula 2



wherein X_1, X_2, Y_1, Y_2, Z_1 and Z_2 individually are CH_2 or CH_2CH_2;

R_1, R_3 and R_4 individually are selected from the group consisting of H, substituted C_1-C_{10} alkyl and unsubstituted C_1-C_{10} alkyl;

R_2 is C_1-C_{10} hydroxyalkyl;

R* is an acid labile protecting group;

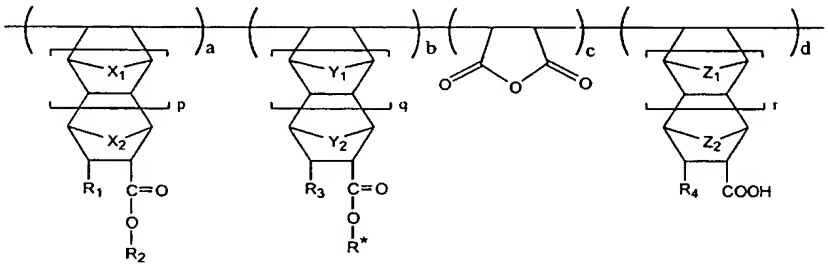
p, q and r individually are an integer ranging from 0 to 2; and

the relative ratio of a : b : c : d is in the range 5~90 mol% : 5~90 mol% : 0~90 mol% : 0~90 mol%.

17. The method according to claim 11, wherein the photoresist polymer is a hybrid-type copolymer comprising a first polymer having a repeating unit of cyclo-olefin backbone and a second polymer having a repeating unit of acrylate backbone.

18. The method according to claim 17, wherein the repeating unit of said first polymer is presented by the following Formula 2:

Formula 2



wherein X_1, X_2, Y_1, Y_2, Z_1 and Z_2 individually are CH_2 or CH_2CH_2;

R_1, R_3 and R_4 individually are selected from the group consisting of H, substituted C_1-C_{10} alkyl and unsubstituted C_1-C_{10} alkyl;

R_2 is C_1-C_{10} hydroxyalkyl;

R* is an acid labile protecting group;

p, q and r individually are an integer ranging from 0 to 2; and

the relative ratio of a : b : c : d is in the range 5~90 mol% : 5~90 mol% : 0~90 mol% : 0~90 mol%.

19. The method according to claim 17, wherein the repeating unit of said second polymer is poly{4-[2-(4-hydroxyphenyl)-1,1,1,3,3,3-hexafluoropropyl]phenyl methacrylate/(1,1,1,3,3,3-hexafluoro-2-tert-butyl carboxylate)isopropyl methacrylate}, poly[N-perfluoropropyl maleimide/t-butyl-5-norbornene-2-carboxylate/2-(perfluoro-octyl)ethyl methacrylate] or poly(maleic anhydride/hexafluorobutyl-5-norbornene-2-carboxylate/2,6-difluoro-methylbenzylacrylate) .

20. The method according to claim 11, wherein the exposure light source of step (a-2) is selected from the group consisting of ArF (193 nm), KrF (248 nm), F2 (157 nm) and EUV (13 nm).

21. The method according to claim 11, wherein the exposure energy of step (a-2) ranges from 10 to 30 mJ/cm^2.